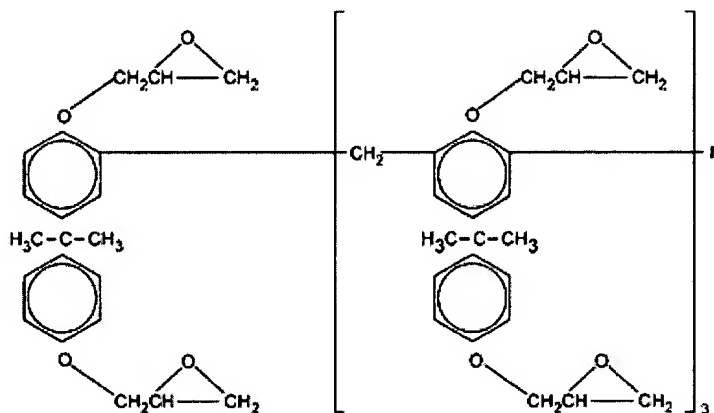


REMARKS

Claims 1-21 and 27-31 are now pending in the application. By this amendment, claims 22-26 have been cancelled without prejudice to their prosecution in a related application, and claims 27-31 have been added.

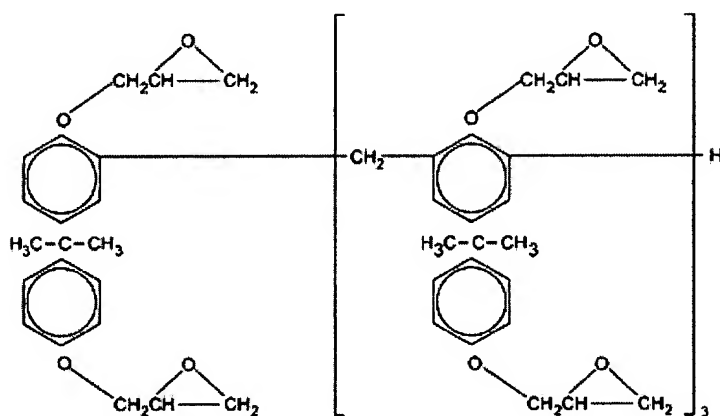
In the pending Office Action, claims 1-21 were rejected under §103 as being unpatentable over the combination of eleven references, namely, Hurditch et al., Mrvos et al., Mancini, Patil, Kohli, Konarski, Daniel et al., Brewer et al., Gelorme et al., Kline et al., and Shaw et al. For the reasons set forth below, reconsideration of the pending rejection is respectfully requested.

As indicated in the application, one aspect of the present invention provides methods of improving negative photoresist compositions that previously consisted essentially of: (a) an octafunctional epoxidized novolac resin is of the formula:



(b) an organic solvent; and (c) a photopolymerization initiator. In one embodiment of the present invention such compositions are improved by adding to the composition 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates,

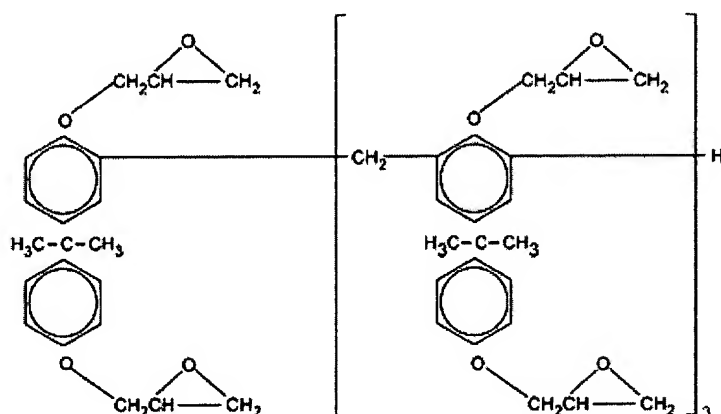
dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates. In another embodiment of the present invention, such compositions are improved by adding to the composition 1% to 6% by weight of a member selected from the group consisting of glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane. In a third embodiment of the present invention, such compositions are improved by adding both 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates, and 1% to 6% by weight of a member selected from the group consisting of glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane. The result of the inventive methods provides negative photoresist compositions consisting essentially of: (a) an octafunctional epoxidized novolac resin is of the formula:



(b) an organic solvent; (c) a photopolymerization initiator; and one or both of: (d) 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates; and (e) 1% to 6% by weight of a member selected from the group consisting of

glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane.

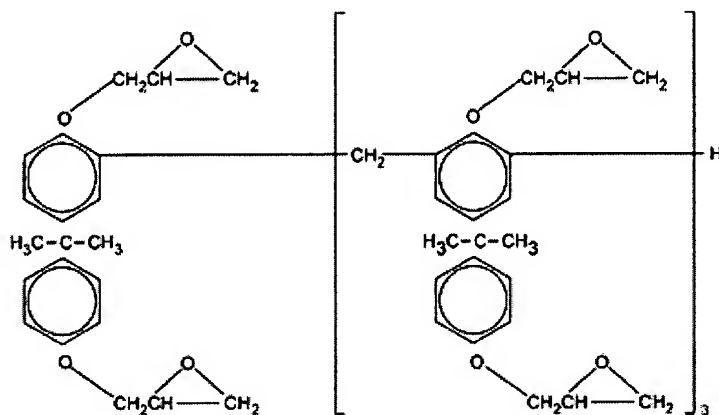
The cited references, when combined as suggested by the Office Action, does not teach or suggest improving negative photoresist compositions that previously consisted essentially of: (a) an octafunctional epoxidized novolac resin is of the formula:



(b) an organic solvent; and (c) a photopolymerization initiator, by adding only one or both of: (d) 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates; and (e) 1% to 6% by weight of a member selected from the group consisting of glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane to the composition. Moreover, the references cited by the Office do not teach or suggest that the improved properties provided by applicant's invention would be provided even if the combination suggested by the Office were made.

As to the cited references, the references cited by the Office are offered to support the contention that it was known to use an adhesion promoter or a plasticizer in compositions comprising resins such as octafunctional epoxidized novolac resins. The

Office does not cite any reference, or combination of references, that appear to teach or suggest compositions consisting essentially of: (a) an octafunctional epoxidized novolac resin is of the formula:



(b) an organic solvent; (c) a photopolymerization initiator; and only one or both of: (d) 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates; and (e) 1% to 6% by weight of a member selected from the group consisting of glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane.

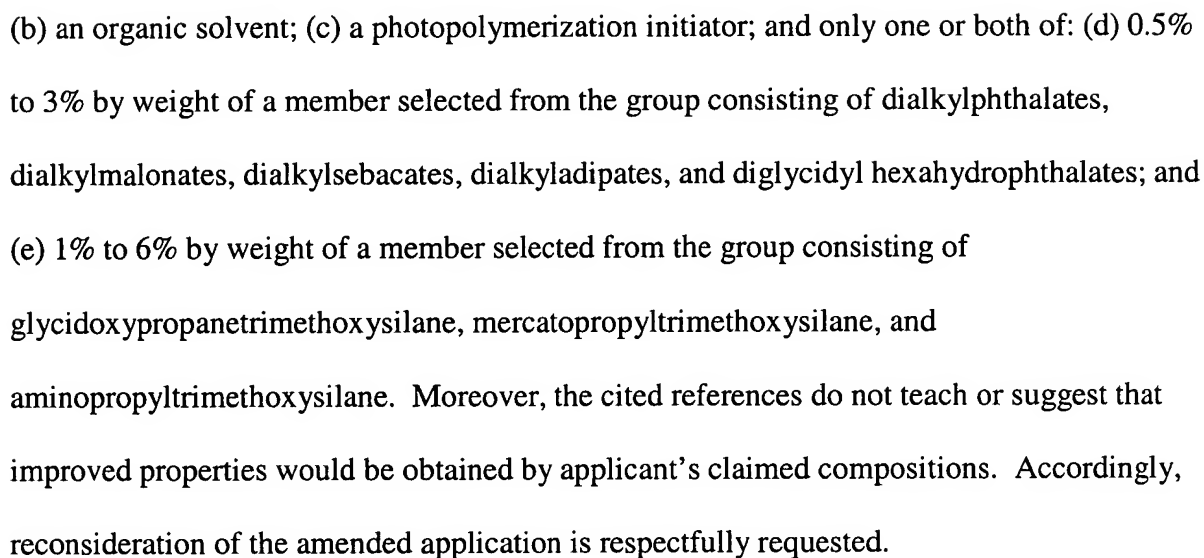
More specifically addressing the cited references, Hurditch et al., Mrvos et al., and Mancini are all cited as teaching the use of reactive diluents generally in octafunctional epoxidized novolac resins. However, none of those references is cited as teaching the use of 0.5% to 3% by weight of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates, or 1% to 6% by weight of a member selected from the group consisting of glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, and aminopropyltrimethoxysilane.


Patil, Kohli, Konarski and Daniel et al. are cited as teaching the use of silanes with epoxy resins. However, none of those references suggests incorporating glycidoxypropanetrimethoxysilane, mercatopropyltrimethoxysilane, or aminopropyltrimethoxysilane into compositions consisting essentially of an octafunctional epoxidized novolac resin, an organic solvent, and a photopolymerization initiator.

Gelorme et al. and Kline et al. are the only references cited as suggesting the use of a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates, and of those two references, only Kline et al. discloses the use of diglycidal ethers of hexahydrophthalic acid as a diluent in epoxy resins. However, Kline does not teach or suggest that a member selected from the group consisting of dialkylphthalates, dialkylmalonates, dialkylsebacates, dialkyladipates, and diglycidyl hexahydrophthalates should be incorporated into compositions consisting essentially of an octafunctional epoxidized novolac resin, an organic solvent, and a photopolymerization initiator.

As to the improved properties, among the improved properties identified in the application as filed are the ability to be used on large wafers without delaminating or cracking. In addition, testing has indicated that the inventive compositions have improved shelf life when compared to the prior art photoresist compositions.

In view of the above, applicant submits that the cited references do not teach or suggest compositions consisting essentially of (a) an octafunctional epoxidized novolac resin is of the formula:




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